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(56) Documents cited

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(58) Field of search
A4M
A4L

# (54) A body support

(57) A mattress 10 is padded along its complete upwardly facing surface and includes a central, generally flat body support 12 with a pair of elongate supports 14 extending along either side which help prevent a patient from rolling around on the mattress. The mattress also includes a support 16 which, in the raised position shown, is able to support the neck and shoulders of a person lying on their back on an upwardly extending surface 18, with their head resting on the downwardly extending surface 20.

The support 16 may be moved to a collapsed position in which it provides a support generally flush with the generally flat body support 12.

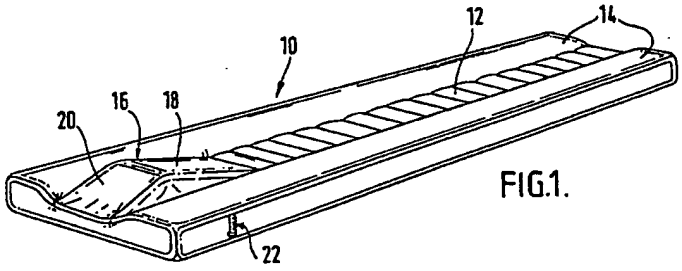


FIG.1.

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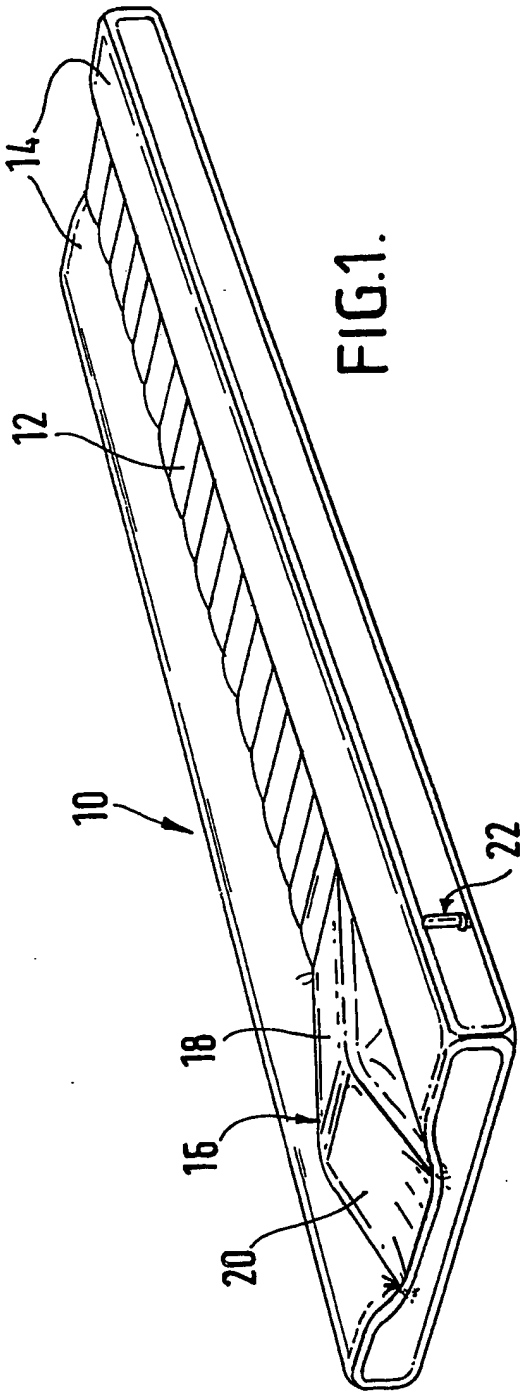


FIG.1.

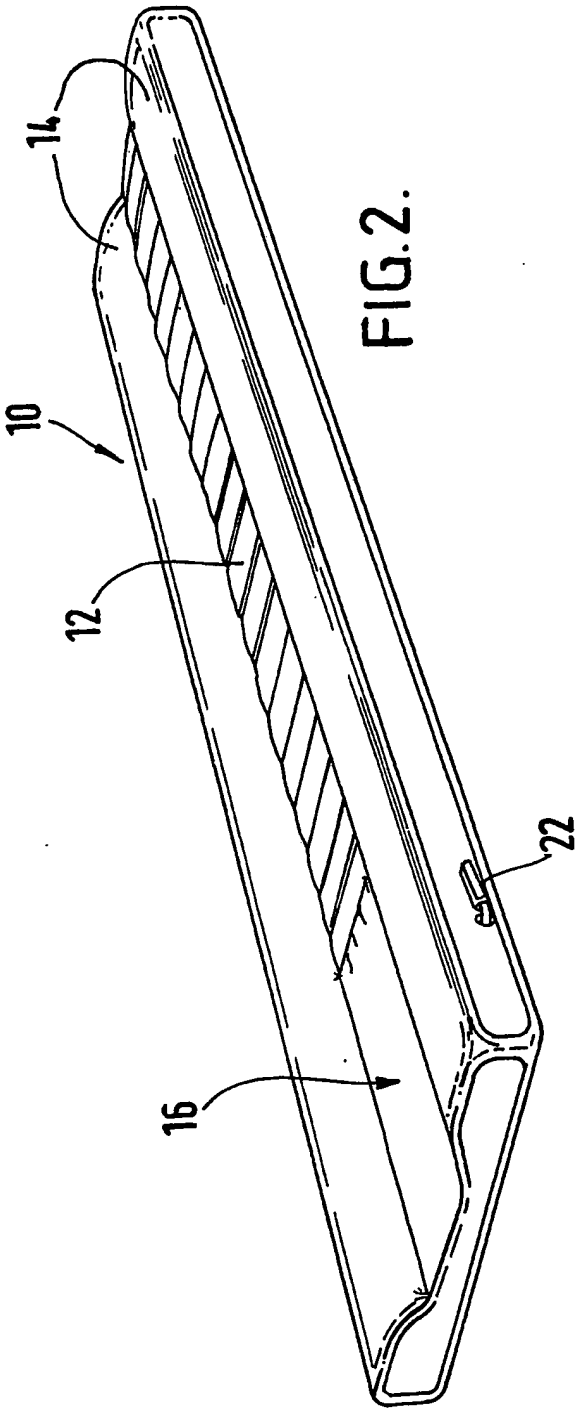


FIG.2.

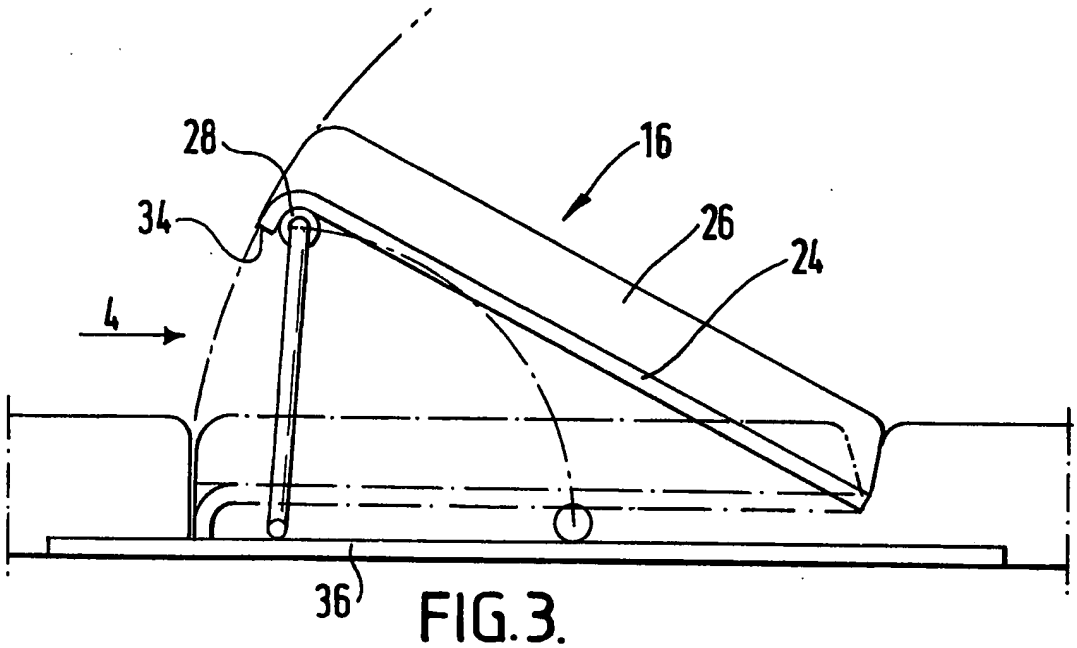


FIG.3.

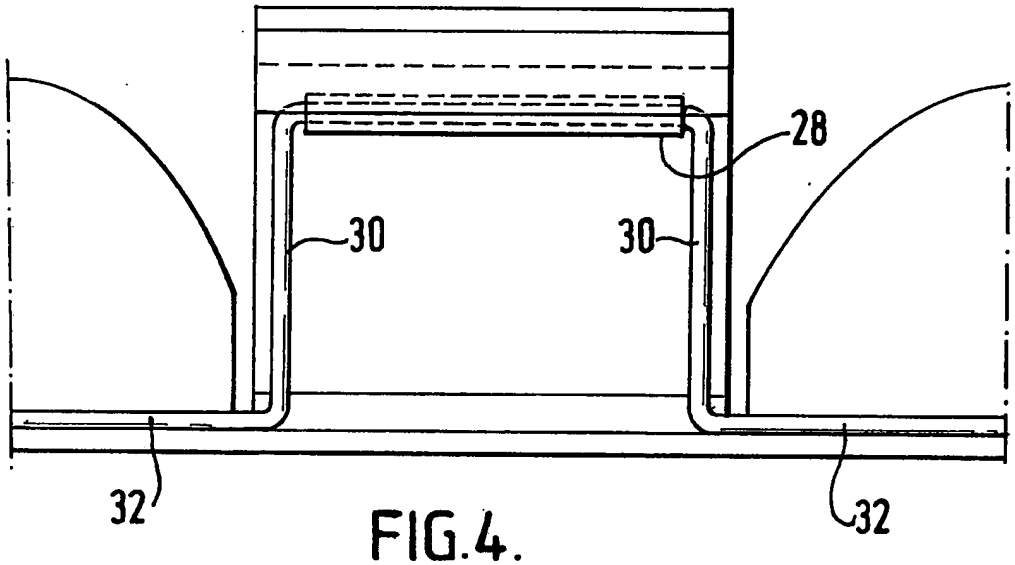


FIG.4.

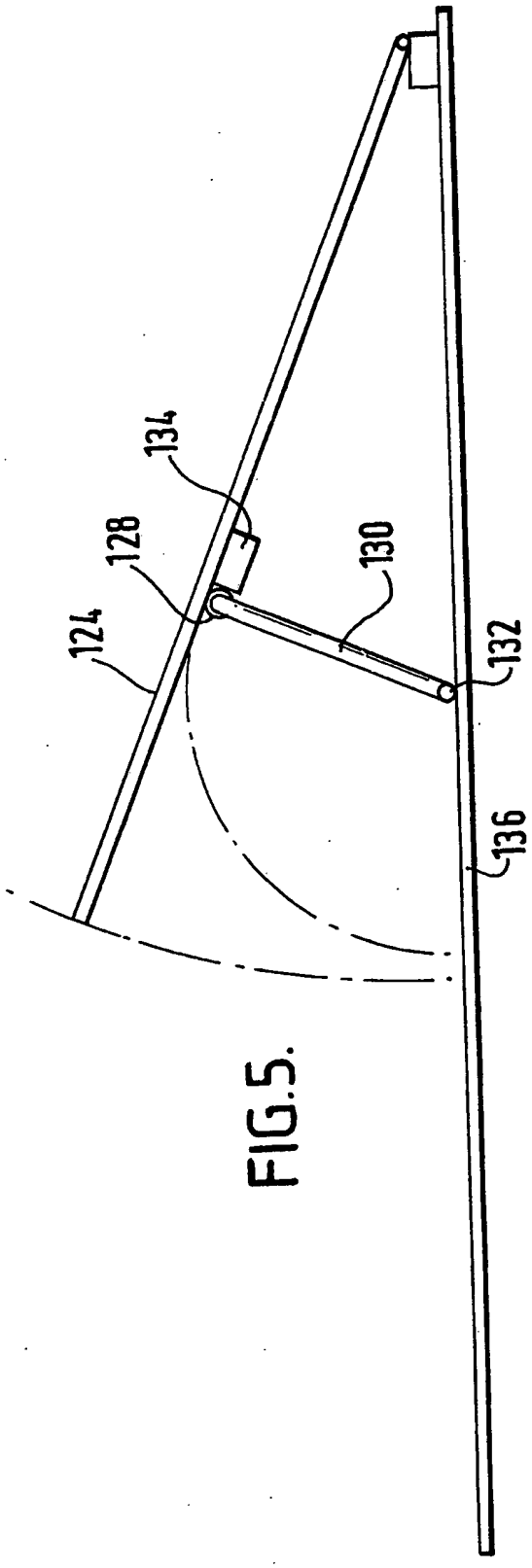


FIG.5.

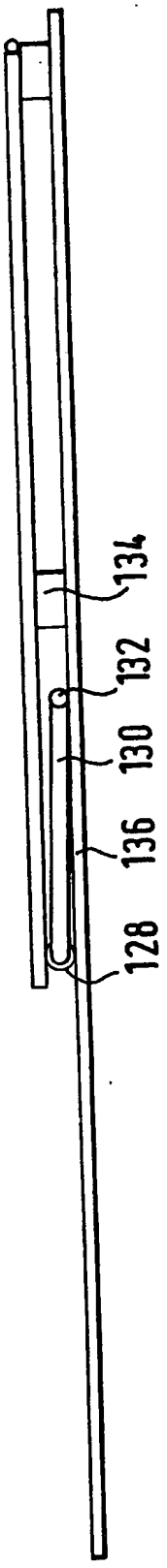


FIG.6.

SPECIFICATION

**A body support**

The present invention relates to a body support and in particular, although not exclusively, to a mattress such as may be provided in ambulances to support a person.

When a person becomes unconscious the muscles of the tongue and throat relax allowing the tongue to fall back and block the airway. One way of maintaining the airway open is to place the person in the recovery position where he lies on his front, but this is not always practical as it require more space than is provided on a normal stretcher and can prevent the casualty's face from being observed. Another way of maintaining the airway open when a patient is lying on their back is to lift the patient and place a rolled blanket under the neck to raise the neck and shoulders and cause the head to tilt back. This tightens the muscles and prevents the tongue from falling back. However, lifting the person is physically difficult because of the weight, and valuable time is wasted in trying to get the blanket into the required optimum configuration. Furthermore, where space is restricted, such as in an ambulance, often there is only one helper who has to roll the blanket, lift and hold the patient up while the blanket is located, and then lower the patient. An additional problem associated with the rolled blanket is that it may slip or be compressed out of shape by the patient.

According to one aspect of the present invention, a body support has a surface upon which a person may lie and a raised support portion intermediate the ends of the surface. A person can be laid on their back on the body support with the raised support portion lifting the neck and shoulders so that the head tilts back. The raised support portion is preferably located towards one end of the body support and may include a surface inclined upwardly towards that end of the body support. Alternatively or additionally the raised support portion may include a surface which extends downwardly towards that end of the body support.

The raised support portion may be movable from the position in which it is raised to a position in which it is generally flush with the remainder of the surface. Thus the body support can be used in conventional manner when the support portion is not in the raised position. The support portion may be moved to the raised position whilst a person is lying on the body support and preferably the support portion may be moved to the raised position against the weight of part of a person's body to cause or allow the neck and shoulders to be raised and the head to be tilted back.

Control means may be provided to allow the support portion to move to the raised position, and the control means may be operable from an edge of the body support.

The body support may include holding means for locking the support portion in the raised position which may prevent the weight of a person's head and shoulders from pushng the support portion down. The holding means may be able to be overcome by raising the support portion from the raised position prior to lowering the support portion back through the raised position.

The control means may comprise a pivotally mounted control member arranged to contact the support portion at a location spaced from the pivot axis of the control member. In the raised position, the weight exerted by a person on the support portion may be arranged to bias the control member into engagement with a stop member. When the support portion occupies the position in which it is generally flush with the remainder of the support surface, the control member may provide a rest for the support portion by contact of the support portion with the control member at a location spaced from the pivot axis.

The body support is preferably a mattress.

The invention may be carried into practice in various ways, but two embodiments will now be described by way of example and with reference to the accompanying drawings, in which:-

*Figure 1* is a perspective view of a mattress including a support in the raised position;

*Figure 2* is a view similar to Figure 1 with the support in a collapsed position;

*Figure 3* is a side view in section of the region of the mattress including the support in the raised position and showing a first embodiment of the raising and lowering arrangement;

*Figure 4* is a sectional view along the arrow 4 appearing in Figure 3;

*Figure 5* is a side view similar to that shown in Figure 3 showing a second embodiment of the raising and lowering mechanism, with the support in the raised position, and

*Figure 6* is a view similar to Figure 5 with the support in the collapsed position.

The mattress 10 shown in Figures 1 and 2 is primarily intended for use in ambulances although it could equally well be used on a hospital trolley. The mattress is padded along its complete upwardly facing surface and includes a central generally flat body support 12 with a pair of elongate supports 14 extending along either side which help prevent the patient from rolling around on the mattress.

The mattress includes a support 16 which, in the raised position shown in Figure 1, is able to support the neck and shoulders of a person lying on their back on an upwardly extending surface 18, with the head resting on the downwardly extending surface 20. This is known as a supine position.

The support 16 can be moved between the position shown in Figure 1 and the position shown in Figure 2 by rotating a lever 22 through a quarter of a revolution. The mechanics of the movement caused by rotation of the lever 22 can be seen from Figures 3 and 4.

The support 16 includes a board 24 which is covered with a cushion 26. A roller 28 cooperates with the underside of the board to cause the board to be raised, or allow the board to be lowered, to the position shown in chain lines in Figure 3. The roller 28 is mounted on a bar which extends from either

end of the roller in a lever arm 30 before passing towards either side of the mattress in opposed axles 32. The projecting part of each axle is connected to a lever 22, one of which is shown in Figures 1 and 2. The provision of a lever on either side of the mattress allows the support to be raised or lowered from either side. Alternatively or additionally a lever may be provided on the end of the mattress to raise and lower the support. Instead of the lever, a rotatable handle may be provided. In an alternative embodiment, not shown, the hinged board 24 is raised and lowered under the action of a cam.

In use, with a person lying on their back on the mattress the support 16 can quickly be lifted to the raised position by an operator moving the lever, without the operator necessarily having to lift the head and shoulders himself.

Movement of the lever causes the roller 28 to bear against the underside of the board and raises the board about a hinge formed at the right hand edge, as seen in Figure 3. The board contiues to be raised until the lever arms 30 extend perpendicularly to the board surface. The board is then lowered slightly until the roller comes to rest in a downwardly extending lip 34 of the board. In this position downwards movement of the board is resisted and an extremely stable raised support is provided. In an alternative embodiment (not shown), the height to which the support may extend in the raised position is adjustable. The board is returned to the collapsed position by reversing the above described sequence. In the collapsed position the downwardly extending lip 34 and the roller 28 keep the board the required distance away from the base 36 of the mattress.

When the support 16 is in the position shown in Figure 2 the mattress may be used in a conventional manner with a patient lying on the mattress or with several people sitting on the mattress.

Figures 5 and 6 show an alternative mechanism to that shown in Figures 3 and 4 for raising and lowering the board of the support. Like parts to those shown in Figures 1 to 4 have been given the same reference numeral prefixed by the number 1.

The board 124, in Figure 5, is held in the raised position shown by the underside of the board engaging with a roller 128 extending between lever arms 130 (only on of which is shown), which are pivotal about an axle 132. Downwards weight on the support 116 causes the rollers 128 to be biased in a clockwise direction, but pivotal movement of the rollers about the axle 132 is prevented by engagement of the rollers with a stop 134 secured to the underside of the board.

In order to move the support from the position shown in Figure 5 to that shown in Figure 6, the roller 128 is pivoted in an anti-clockwise direction by moving a lever (not shown) connected to the axle 132 in an anti-clockwise direction. This movement causes the roller 128 to first push the support upwardly in a clockwise direction about its lower right hand end (as seen in the drawing) before allowing the roller to take the weight of the support as it is lowered in an anti-clockwise direction to the position shown in Figure 6. In that lowered position, the roller is sandwiched between the base 136 and the support and serves to hold the support. Similarly, the stop 134 engages with the base 136 to provide a support. It can be seen that the roller pivots through between about 105° to 110° as compared to the 90° through which the roller shown in Figures 3 and 4 rotates when moving between the raised and collapsed positions of the support.

At least in the region of the support 16, the mattress is covered with an elastic material (not shown in Figures 3 to 6) which prevents the surface from sagging or being crumpled when in the position shown in Figure 2 and accomodates the change in shape caused by raising the support 16.

CLAIMS

1. A body support including a surface upon which a person may lie, and a raised support portion intermediate the ends of the surface.

2. A body support as claimed in Claim 1 in which the raised support portion is located towards one end of the body support.

3. A body support as claimed in Claim 2 in which the support portion includes a surface inclined upwardly towards said one end of the body support.

4. A body support as claimed in Claim 3 or 4 in which the support portion includes a surface which extends downwardly towards said one end of the body support.

5. A body support as claimed in any preceding claim in which the support portion is movable to a position in which it is generally flush with the remainder of the surface.

6. A body support as claimed in Claim 5 in which the support portion may be raised from the position in which it is generally flush with the remainder of the surface whilst supporting at least part of a persons weight.

7. A body support as claimed in Claim 5 or 6 including control means operable to allow the support portion to be raised from the position in which it is generally flush with the remainder of the surface, or to allow the support portion to be moved to that position.

8. A body support as claimed in Claim 7 in which the control means are operable from an edge region of the support.

9. A body support as claimed in any of Claims 5 to 8 including holding means which are capable of preventing at least part of a persons weight being supported by the body support from moving the support portion from the raised position.

10. A body support as claimed in any of Claims 5 to 9 in which the support portion, when being moved from the raised position to the position in which it is generally flush with the remainder of the surface, is first caused to move to a position in which it is further raised before passing back through its raised position.

11. A body support as claimed in any of Claims 5 to 10 including a control member, pivotal movement of which may effect movement of the sup-

port portion between the raised position and the position in which it is generally flush with the remainder of the surface.

12. A body support as claimed in Claim 11 in which the control member may be arranged to pivot between 80° and 120° to effect the movement of the support portion.

13. A body support as claimed in Claim 11 or 12 in which the support portion is arranged to rest on a portion of the control member when the support portion lies generally flush with the remainder of the surface.

14. A body support including a surface upon which a person may lie and a support portion intermediate the ends of the surface movable between a position in which it is raised and a position in which it lies generally flush with the remainder of the surface.

15. A body support substantially as herein described with reference to, and as shown in Figures 1 and 2, 3 and 4 or 5 and 6.

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